Part I — Title Page and Preface

Title Page

THE DIATEMPORAL METRIC

or

The Evolutionary Agreements of Time in Languages with Quantitative Inflections

New Edition — Revised and Expanded

AMIR FEREYDOUN MOTAMED

M.A., Columbia University

Former Associate Professor at the Institute of Technology of Abadan

Published by the Presses of the Ministry of Information

5 Estakhr Avenue — Tehran, Iran

All rights of reproduction, translation, adaptation, and performance reserved for all countries, including the U.S.S.R.

Preface

How and for what purpose this work was undertaken

The ear left to itself cannot claim infallibility.

During my last stay in France, while reading an old collection of French poetry, chance placed in my hands a beautiful edition of Hafez.

“A lyric poet from our land!” I said to myself, expecting nothing more.

But the immediate contrast between the order and harmony of quantities in the two poetic traditions struck me all the more vividly since for many years I had been far from Iran — from its clear yet mysterious horizons.

All sorts of questions began to turn in my mind — so poorly illuminated that at last the idea of a study, and perhaps a contribution, sprang up: to depart from our own method, so strange and so graceful, and seek its deeper logic.

I resolved to search for the springs of charm that radiate from those homogeneous structures to which the French yield with such ease.

Yet after a few readings I saw that before solving any problem of French versification, I had still to resolve that of Persian metrics itself.

For while it teaches the mechanics of metres and distinguishes the correct from the false, it does not reveal the logistic and aesthetic foundation—the pure source from which its technique draws virtue.

After this first, fruitless investigation I might have stopped there; but the seed had become a passion, and I was certain I stood on the threshold of a rich mine.

I wished to emerge from the penumbra and find analogous solutions by bridling the quantity of French speech within its poetic language—by uncovering the mechanisms of rhythm and harmony that I felt resonate in certain poets—so as to reduce one of the greatest difficulties of this art.

I had felt that difficulty myself in college when I tried to express my reveries within the cadence of a well-sustained beat.

I remember delighting in playing with the movement of words, as a child plays with a ball, achieving a grace at once instinctive and free — yet alas, the words escaped me; it was they who played with me.

The years of youth in Iran had surely left in me an indelible need for perceptive balance whose echo I could no longer find.

Nearly twenty years later, I finally understood the reason for my frustrated love and disgusts of old: not everyone is born a La Fontaine, creating rightness by the ear — and even he, we are told, did so with difficulty.

It was necessary to overcome that enemy weakness and take the offensive.

“There must be general laws,” I told myself, “laws measurable and transmissible, as in music.”

And even in moments of deepest discouragement I never lost faith, for I felt that within the great French texts there lay a rigorous quantitative harmony of composition that I had to discover at any cost.

I wanted to know why some poems form a coherent body and sound right throughout, while others seem weak or fatiguing.

Boileau advises us to file, polish, and re-polish—perhaps meaning that a verse should be neither hollow nor over-heavy.

The image is beautiful, but it defines nothing of the just, the hollow, or the raw; and as an instrument of quantitative aesthetics, it is poor indeed.

Since then no one—not even Verlaine, whose “Impair” was not based on any aesthetic reasoning—has added anything substantial.

The Need for an Aesthetic of the Quantity of the Inflected Word

Modern man, whatever his occupation, needs an aesthetic sense more than ever to maintain his balance.

In every art except poetry there are courses and serious books that initiate and cultivate taste; for a civilization needs not only genius but a great number of dilettantes and craftsmen.

Strangely, the most mysterious and hermetic art in Europe and America remains that of ordered language.

Here lies a gap to be filled, an art to make accessible to the many.

In the East, works on poetics usually take two forms: either they treat metrics and rhyme as applied technique, or they present metrics followed by rhetoric, giving poetry its rightful majesty and respect.

In French, the art of eloquence (has been remarkably developed for oratory and for the Alexandrine line by many masters), yet metrics — the foundation of poetics — remains unclear despite numerous attempts.

Even in France, for the agrégation in French, no course or treatise exists on this subject.

Students must rely on their own aesthetic judgment and hope to draw a text by chance — perhaps La Fontaine, whose intuitive yet precise handling of quantity can exasperate, in contrast to poets who prefer the equality of syllables, where imperfections of weight and agreement are levelled by numeric regularity.

“Tell us, please,” I ask, “what is that single three-syllable verse doing in La Cigale et la Fourmi, where all the others have seven — and why does it produce no imbalance?”

Before this ferment of harmonic quantity we stood surrounded by mystery, yet we felt, through French literature, that the task had long been prepared — even before Boileau.

Eurhythmic quantity has existed always in all Indo-European languages, first intuitively, then cultivated where aesthetics took interest, as in the Orient.

This aesthetics rests on a simple logic of harmonious proportions and pleasing movement to the ear; but though the principle is simple, its units lie at the border of being and non-being, of sensation and understanding — once defined, they lead to a fertile metric that may revive French poetry and honor its predecessors.

The aim is not to destroy but to integrate — to add to the current syllabic count a quantitative count based on isochronous ensembles that carry transitive meaning; in other words, to draw better profit from the rational laws of evolving temporal accords.

Historical Overview

The principles of quantitative harmony were codified in Arabic around the mid-9th century by the aesthetician Khalil ibn Ahmad al-Farahidi, then the learned language of the Muslim East.

Since then he has been rightly cited with the greatest respect in every work on Oriental metrics.

The present book is nothing other than a scientific decipherment and an extension of his technique, adapted to the needs of a less rigid metric.

Khalil’s method emerged from logical and musical foundations and was accepted unanimously by his contemporaries.

Yet the answers to the great “why” and “how” of his system were lost over time.

Perhaps a rule was set: publish the mechanism, but not its reason — lest its perfect arrangements be disturbed.

Thus all metric treatises remain silent on certain key words and speak only in generalities.

Still, the ease with which Persian and Arabic fit into metrical patterns arises from their natural balance — three long vowels in six, and a refined quantitative flexibility in word formation.

Ferdowsi, for example, composed some sixty thousand couplets, all within the metrical type Motaghareb, akin to the Bacchic metre of Greek and Latin.

For languages with stiffer rhythmic movement, it is almost impossible to remain within one fixed metre; one must settle for a type and its variants.

Khalil, working with ideally balanced and malleable languages, could easily find countless models to test his theories and formulate harmonious patterns of great significance.

His metric system, later rediscovered by European orientalists toward the end of the 18th century, inspired attempts to apply its principles to Western verse.

Yet most misunderstood its essence: they focused on accents and ictus as if music alone could explain rhythm, whereas only the study of revolving temporal accords—which lead to true rhythm and harmonious movement—could have guided them aright.

Part II — The Aesthetic Fruitfulness of Various Metric Methods in Use

Languages that employ quantitative measurement contain short and long syllables, and flexions that affect quantity in different ways.

They are therefore characterized by the inequality of durations—an inequality that demands the restoration of equilibrium, and consequently, of stabilizing pauses whose number itself becomes meaningful.

By contrast, monosyllabic languages such as Chinese can use only a strictly literal count.

To compensate for the monotony of equal quantities, they combine in their verse semantic groupings of two to five syllables returning at regular intervals; here, the play of tones and vowels alone carries effect.

These languages thus rely upon the same universal foundations of harmonious proportion, but applied to sound and pitch rather than to the play of time-values of which they are deprived.

Yet the absence of quantitative modulation is no advantage—for the more a language is compelled to sing, the closer it approaches parody and theatricality.

A shade of tone is all that speech requires; when tone becomes melody, language borders on the ridiculous.

The metrics particular to such monosyllabic tongues, while not devoid of aesthetic motives, offers no immediate field for our study.

(He includes a schematic illustration in the original: flat tones shown by a horizontal line, rising tones by a vertical stroke.)

Beyond these tonal nuances and the laws of harmony that govern them, there are, of course, other factors which play—sometimes decisively—within the orchestration of language; yet despite their varying degrees of influence upon duration, we can clearly distinguish in Europe two principal modes of quantitative treatment:

(1) that of the soft or melodic languages, and (2) that of the strong or accentual languages.

I — Syllabic Versification

The first mode, used in the Romance tongues, may be called soft.

It unofficially—and quite gratuitously—rests on the assumption of equality between long and short syllables, using pauses of meaning and oratorical movement to mark divisions.

In this system one seeks symmetries and harmonies of sound through semantic stresses placed at nearly regular syllabic intervals—through alliteration and assonance—but no rational law governs the cadence, the concord between harmonic units, or the regularity of the resulting motif.

Nothing defines the interdependence of “weight” and “number” (form and function); all depends upon the poet’s taste:

> “Keep a severe ear for cadence;

Let sense, in cutting lines, suspend the hemistich and mark repose.”

— Boileau, Art Poétique.

Examples of Classical Metric Divisions

Classical ternary cuts:

> “Happy / he who is content / with humble fortune,

Free / from proud bondage / to which I am chained,

Living obscure / where the gods / have hidden him.”

— Racine, Iphigenia.

Binary semantic cuts but rhythmically ternary, for even in quantity there is rest at the caesura:

> “Who knows, fair girl with blue eyes, / what they would say of you?

Perhaps, indeed, / you would punish me for it.”

“You would reply, / perhaps—I know it well.”

“A little air / of doubt / and melancholy.”

“That you would dare / to count me / as your creation.”

The true romantic trimeter is formed of three semantic fragments without need of pause at the caesura:

> “He is without fear, / without guile, / without stain.” — Hugo

“The proud archer / took one step / among the reeds.” — Hérédia

“With slow steps, / music in head, / without fury.” — Musset

“Now from the woods, / now from the seas, / now from the clouds.” — Hugo

“To think no more, / to love no more, / to hate no more.” — Th. Gautier

These binary or ternary cuts, established by Maurice Grammont, clearly rest upon Boileau’s principle: they always occur after a long syllable bearing semantic stress.

Pentameters and hexameters confirm it beyond doubt.

Yet in terms of pure quantity, none of these groupings—neither heureux, nor libre, nor qui sait—is sufficient to form a truly eurhythmic ensemble, which requires at minimum two constitutive elements regardless of accent or tonal strength.

Only at fixed pauses, such as verse-endings, may an element be shortened or suppressed for reasons of lightness or ease of transition.

The Romance languages possess finely graded quantities, but their proximity forbids us to ignore the differences.

They are fused tints compared with the brighter hues of northern tongues, yet the differences are undeniable: hence the constant advice to “seek rhythm.”

The word is just, but what is rhythm? Has anyone defined it precisely? Has anyone examined the functional virtue of quantity—the flexional power that is now perishing for lack of care?

Consequently, any pleasing proportion or quantitative movement found in such verse is but the fruit of the poet’s intuitive taste.

The semantic cuts play only a fortuitous part; they lie outside the true problems of cadence and harmonic relation.

Pauses determined by meaning may fall after any number of syllables; this makes it nearly impossible to evaluate and balance the weight of parts among themselves, for the discrepancies may be vast.

No means remains to verify or arrange the movement of conjunctive accords, which have nothing to do with semantic motion.

Meaning may lighten the phrase, clarify sense, and provide a general proportion, yet it abandons harmonic measures to the hazard of tone, feeling, and idea.

Thus this method suits general comprehension and musical flow but penetrates no further into the science of temporal harmony in its pure state.

II — Measurement by Strong and Weak Ictus

This method marks progress, for it conceives somewhat more clearly the duration traversed by syllables and rhythmic groupings; yet it, too, is flawed, because it gauges duration indiscriminately by the laws governing audible intensity.

Northern prosody, identical to that of the ancients, rests on an intuitive balance of forms alone, believing that rhythm and harmony depend solely on lifted and struck beats.

Any grouping conforming to that alternation seems sufficient.

But as this often fails, critics have ascribed to pitch and accent—a convenient refuge—the magical power to stretch or compress duration, when in truth they are wholly foreign to the quantitative relations that create eurhythmic ensembles.

The only external element indispensable to the perception of these relations is the stabilizing pause.

The play of ictus—whether falling on long or short syllables—enriches only sense, musical modulation, and the personal melody of each line through varied recurrence of frequency and amplitude.

It is most beautiful when confined to its natural role: that of qualifying time.

But it cannot replace the demands of pure duration; any other view is mere prejudice.

Motamed then analyses numerous patterns, showing how accent-based metrics produce enormous disparities of weight and how poets must “correct by ear,” as Edgar Poe noted in The Rationale of Verse.

Even with equal syllable-counts, accentual cutting can disrupt the motif of order.

Hence, while the introduction of secondary accents narrows error, the required precision of eurhythmic grouping is still absent.

This method, atomistic since antiquity, confuses time with accent and imagines that language can play upon the pattern and order of transitivities in its harmonic sets.

He explains, with musical analogy, that frequency (pitch) and amplitude (loudness) may give the illusion of strength but do not alter temporal weight.

The human ear perceives duration thresholds, but a high tone may seem “accented” only because it is more perceptible in space, not because it lasts longer.

Similarly, an energetic tone may seem heavier, yet its quantitative value remains unchanged.

He concludes that the northern and imitative Romance prosodies err when they grant to pitch or volume the power to modify duration.

This leads to four false postulates:

1. An unaccented long is treated as short.

2. A stressed short is treated as long.

3. Unstressed syllables may be dropped entirely.

4. Pauses are determined by accent rather than by rhythmic need.

Such rules, Motamed insists, destroy true harmony: duration is objective; intensity is subjective.

He likens it to Bergson’s “psychological time”—felt longer or shorter by emotion, yet useless for a clock or factory.

So too with verse: emotional accent may color perception but cannot change the physical law of rhythmic balance.

After detailed phonetic reasoning, he affirms that every syllable counts in French.

However strong or weak, none can substitute for the temporal value of another without disturbing the established proportional order.

A long uttered with undue stress or a short forced into prominence upsets the chain of harmonic relations.

He closes this section with an image:

A boxer, suffering in the ring, feels each second as a minute and his rest as fleeting; yet true time has not changed.

So the poet who confuses intensity with duration deceives himself with psychological illusion.

III — The Metric of Khalil

Departing, probably, from the aesthetic reasoning that in a perfectly balanced whole nothing may be added without marring it, Khalil ibn Ahmad conceived the idea of enriching the quantitative scale of poetry.

Founded on arithmetic symmetry of literal quantities, it conforms to rhythm and unified harmony but transcends accident: it allows pure quantity—that is, time itself—to attain an isorhythmic order semantically unbound, governed by intervals of equal harmonic value.

Pure quantity thus acquired relations and possibilities strikingly identical to those of the tempered diatonic scale in music, ending the old confusion

between rhythm and accent that had troubled European prosody since Greece and Rome.

In Khalil’s system, musical sounds yield consonances by simultaneity, but quantitative sounds yield harmony by succession—by graduated intervals akin to the ratio of nine to eight between tones.

Hence his metrical units possess individual and general proportions enabling them to harmonize through regular intervals while preserving rhythmic succession.

These relations are established by the play of the stabilizing pause or a similar temporal element—not by any acoustic feature of the sound itself.

His metric, spreading from the Maghreb to Indonesia through Arabic, the scientific lingua franca of those regions, has five essential characteristics:

1. Without ever leaving the temporal foundation, it measures quantity by duration of vocal sound rather than by orthography, distinguishing long, short, and common syllables.

The “common” may align with either long or short depending on position and the poet’s choice, giving the language remarkable mobility.

2. It emerges in strongly harmonic proportions of structured totalities where form and function correspond logically.

3. It introduces the stabilizing pause—one of the “secrets of the gods,” never revealed though logically measurable—which balances rhythmic sequences.

4. By exhausting all possible ratios implied in rhythm and accord, it establishes full and derived metres on the levels of the fourth and fifth—never exceeding the perfect fifth in musical terms.

5□ The formal law of the harmonic ensemble is counted by morae (time-units), while the pattern and transitivity types (the functions) are revealed by the ordinal position of shorts within each ensemble, according to a syllabic count.

Thus it has its own leitmotif of proportions and movements, through which any semantic grouping may evolve independently of accent or tone.

Poetry so conceived satisfies all laws of aesthetic perception of temporal quantity; its form, even when typographically scattered, gives the ear a sense of fullness, of completed harmonies, of a motivated movement from verse to verse.

Sound itself finds there a far more favorable field of expression.

Yet, he cautions, even so advanced a metric is not sufficient for artistic creation.

Like the syllabic system, it requires sense, imagery, and emotion.

But it is indispensable to the critic, and dangerous for a modern poet to ignore, for it offers a firmly established method of measure—new to Europe—that may provide what many now seek blindly: a rational foundation for the harmony of poetic time.

The metric, Motamed concludes, is above all a reasoned structural aesthetic, distinct from the intuitive state of inspiration.

The Persian or Indian poet assimilates his metres and licenses until they become second nature; having learned thousands of examples by heart and practiced countless scansions, he strikes thought upon a keyboard that is always in tune.

IV — Difference Between Quantity in Prose and in Poetry

Prose is a free succession of longs and shorts forming semantic groupings balanced by judgment; poetry arranges these same quantities into recurrent, harmonized groups, united by clear transitive relations up to the concord of one or several rhymed couplets.

In prose the harmonic grouping is looser—its unity comparable to the intricate counterpoint of a Bach fugue, where countless motifs coexist within general proportional coordination.

Motamed illustrates with passages from Bossuet’s funeral orations, showing that each rhetorical period corresponds to distinct metrical “types”: majestic quaternary ensembles, Alexandrine-like trimeters, syncopated quartets, and rapid concluding measures—each chosen to fit its thought.

By contrast, poetry demands constancy of metre type and restricts variation to an aesthetic margin of only a few temporal units.

He explains, with references to Persian and French verse (Le Corbeau et le Renard), how this margin provides freedom without destroying equilibrium.

Excessive variation, he warns, breaks movement and fatigues the ear; yet moderate flexibility lends vitality.

Thus, the difference is clear:

Prose—free cadence, diffuse motion;

Poetry—controlled cadence, measured and harmonized movement upon a uniform metrical type.

Part III — Book I: The Metric Structuralism

Of all known systems of metrics, that of Western Asia—transmitted to us as a precise operative technique—seems uniquely to arise from the

interdependence of ordered forms and functions: a logic that gradually became more meaningful than the formal descriptions to which it had long been confined.

Nothing has shaken the aesthetic structure of that tradition throughout its millennia of lineage.

Every so-called innovation added by later metrists amounts merely to inverting the sequence of metres—white hat for black hat—while probability-based forms explain almost nothing.

Pursuing my first intuition, I therefore sought to reconstruct the intrinsic intelligibility of that metric through the logic and foundations of musical harmony—terms expressly invoked by great Iranian thinkers such as Avicenna and Khadjeh Nasir al-Din Tusi in their discussions of this structuralism—so that the extension of its governing principles might still prove useful to other Indo-European languages.

Wishing that this synthesis be more unified than my earlier attempts of 1962 and 1963, I hope hereby to pay better homage to the fertile and astonishingly advanced thought of one of the greatest geniuses the Orient has produced: Khalil ibn Ahmad al-Farahidi.

Chapter 1 — Toward a Logic of Quantitative Harmony

To grasp the foundations of rhythmic order, we must recognize that every linguistic act involves three inseparable phenomena:

1. Emission — the energetic projection of sound into time;

2. Extension — its measurable duration;

3□ Resolution — its return to silence, which closes the cycle and prepares equilibrium.

The union of these three constitutes what Motamed calls a temporal accord.

Whereas European prosody analyzes only the second (duration) and often confuses it with accent, Oriental quantitative metrics takes account of all three within a unified proportional system.

Just as music distinguishes between the value of a note, its attack, and its rest, language too possesses quantitative triplets whose interrelation creates rhythm.

To ignore one element is to lose harmony; to measure all three is to enter the science of diatemporality—the perception of time through successive quantities.

Motamed formulates a law of harmonic proportion:

> “For any linguistic sequence to be felt as rhythmically complete, the sum of its durations and rests must resolve into an isochronous balance perceptible to the ear.”

This law, though simple, explains why certain verses feel “just” regardless of accent, and others never quite fall into place.

Chapter 2 — From Structural Equilibrium to Aesthetic Perception

Structural equilibrium is not a mathematical abstraction but a sensory fact.

When quantities are proportionally distributed, the ear perceives them as restful movement.

If one duration exceeds or falls short of its harmonic expectation, tension arises—the ear demands compensation, and cadence is born.

This is what Motamed terms diatemporal evolution: the progressive resolution of quantitative tension toward equilibrium.

Each verse, each line, carries within it a small cycle of departure, tension, and return—exactly as in music between tonic and dominant.

Thus poetic structure mirrors harmonic causality: quantity (time) → order → emotion.

Meaning and sound intertwine only because both obey the same universal logic of proportion.

Chapter 3 — Quantitative Units and Isochronic Ensembles

Motamed classifies temporal values into measurable units of duration—the morae of Khalil—but redefines them scientifically:

Short (brève) = 1 time-unit

Long (longue) = 2 time-units

Common (commune) = variable, 1 or 2 units depending on context

Pause stabilisatrice (stabilizing rest) = 1 unit if paired, 1.5 if odd

These combine into isochronic ensembles, rhythmic groups whose total time equals an integer multiple of a base value (typically 4 or 8 units).

An ensemble's function is determined not only by its duration but by the position of its short syllables—its internal rhythm or "motif of transitivities."

Example (simplified from his tables):

v – – v | v – v –

(short = v, long = –)

Both groups may occupy eight time-units yet differ entirely in aesthetic function, just as two musical measures of equal length can differ in melody.

Hence structuralism in metrics does not count syllables—it evaluates relations of time within bounded sets.

Chapter 4 — Transitivity and the Movement of Meaning

Every harmonic ensemble communicates not only rhythm but direction.

A verse that begins with short syllables and ends with longs “ascends” in weight; the reverse “descends.”

These progressions, when sequenced, generate transitivity—the flow of temporal energy through the poem.

Motamed identifies three major types:

1. Direct (progressive) — motion from light to heavy; creates gravity and conclusion.

2. Inverse (regressive) — motion from heavy to light; creates suspension or question.

3. Alternating (isochronous) — balanced alternation; creates serenity.

The artistry of a poet lies in combining these transitive motifs so that emotional evolution parallels quantitative evolution.

A lament, for instance, alternates between direct and inverse sequences, imitating sighs; heroic verse maintains the direct, asserting finality.

Chapter 5 — Applications to Indo-European Languages

Persian and Arabic, with their flexible vowel lengths, readily support this architecture.

French and English, though less plastic, still contain perceptible durations—vowel openness, consonantal clusters, and rhythmic pauses—that can serve as substitutes for quantitative contrast.

Motamed proposes that French verse, long bound to syllabic count, can regain vitality by integrating these temporal ratios:

> “To the arithmetic of number we must add the geometry of duration.”

By aligning syllabic rhythm with the hidden pulse of duration, French poetry may recover the musicality once intuitive to La Fontaine and Racine.

The same reasoning, he adds, could extend to English, Italian, or even German, where latent quantitative distinctions await rediscovery.

Chapter 6 — Conclusion of Book I

The metric structuralism is therefore a complete theory of temporal architecture in language.

It joins logic, physics, and aesthetics under a single principle: that beauty in speech arises from measured harmony of time.

> “The word,” Motamed writes, “is a vibration. When its durations accord as tones do, the ear perceives not merely sense but structure—order become emotion.”

Thus ends the first book, opening the way to his second volume, in which he develops mathematical formulations and comparative analyses of Persian, Arabic, and French metres.

Part IV — Book II: Applications, Examples, and Concluding Essays

Chapter 1 — From Theory to Demonstration

Once the principles of quantitative harmony have been defined, their validity must be tested by the ear and by reason alike.

Every verse, whether in Persian, Arabic, or French, may be scanned in the language of time.

If the durations of its syllables, rests, and pauses compose an isochronous ensemble, it will be perceived as just; if they deviate, the ear will demand correction.

Motamed likens this to the tuning of a stringed instrument.

The poet, like a musician, must verify that his measures form a continuous vibration without excess or void.

When an error appears, it is not semantic—it lies in the temporal weight of the phrase.

True rhythm, he insists, cannot be heard by counting syllables; it must be measured in breath and duration.

To demonstrate, he compares parallel couplets from Hafez, Racine, and La Fontaine.

Though separated by centuries and tongues, they share a single underlying geometry of time:

– an opening ensemble of light syllables introducing movement;

– a stabilizing pause at midline;

– a descent toward rest through elongated vowels.

The difference lies only in surface ornament—the harmony of the inner durations remains constant.

Chapter 2 — Quantitative Analysis of the Persian Metre

The Persian metric, Motamed explains, derives from Khalil’s system but refines it through a sense of melodic continuity.

Each beït (distich) forms an independent harmonic entity composed of two stikhos, each with a mirrored pattern of eight to twelve time-units.

He sets out several canonical patterns—Hazadj, Ramali, Motaghareb, Khafif—and transcribes their time-values numerically:

Metre	Basic Pattern	Total Duration	Function
Hazadj	v – – v / v – v –	8 units	balanced, lyrical
Motaghareb	– v – / – v – v	8 units	epic, assertive
Khafif	v – v – / – v –	7 units	supple, meditative

He shows that Persian poetry’s musical beauty arises from the isochronic symmetry of these patterns, not from rhyme alone.

The rhyme merely marks the cadence; the true equilibrium lies in the hidden mathematics of duration.

He notes that even when a poet departs slightly from the canonical sequence, the balance of time remains—the deviation is absorbed by an internal compensation elsewhere in the verse.

Thus liberty in art is permitted only when equilibrium is preserved.

Chapter 3 — Extension to French Verse

Turning to French, Motamed acknowledges that vowel length distinctions are weaker, yet duration still exists in the openness of vowels, the density of consonant clusters, and the micro-pauses between syntactic units.

He rewrites several lines of Boileau and Verlaine in diatemporal notation, showing that despite the absence of explicit long and short marks, their timing obeys the same quantitative laws.

Example (Verlaine’s Chanson d’Automne):

> Les sanglots longs / des violons / de l’automne…

In Motamed’s notation this becomes:

v – v / v – v / – – v

—an alternation of light and heavy values totaling twelve units.

The emotion of languor arises from the descending pattern of transitivity and the extended final rest.

He argues that French poetry’s decadence after the seventeenth century stems from abandoning this subconscious quantitative sense in favor of mere syllable counting.

Recovering it, he writes, would reconcile French with its own natural music.

> “The word, when weighed, regains its gravity; when measured, its grace.”

Chapter 4 — Comparative Observations

Motamed then compares German, English, Italian, and Greek structures.

He observes that German’s abundance of long consonantal syllables gives it a weight akin to the Persian motaghareb mode, while Italian’s open vowels favor the lighter hazadj.

English, he notes, alternates naturally between strong and weak beats, resembling a hybrid of quantitative and accentual systems; it could therefore become a bridge between East and West in the science of rhythm.

He cautions against assuming that all poetic beauty is cultural:

> “There is a universal mathematics of movement.

Just as all men walk by alternation of steps, all languages breathe by alternation of times.”

Chapter 5 — Mathematical Formulation

Motamed now formalizes his law of temporal harmony in numerical terms.

Let each syllable or pause have a value measured in arbitrary time-units.

For a verse of elements, rhythmic equilibrium occurs when:

$$\sum_{i=1}^{n} t_i = kT$$

The condition of diatemporal concordance requires that for any contiguous subset of elements, the ratio of cumulative durations approximates rational proportions of small integers (e.g., 2:3, 3:4, 4:5).

When this proportion fails, the verse feels uneven; when preserved, it “sings” naturally.

He remarks that this principle is the same as the Pythagorean ratios in music and the harmonic proportions of architecture:

beauty is a function of measurable relation.

Motamed even constructs a table correlating metrical values to musical intervals:

Quantitative Ratio	Musical Equivalent	Perceptual Effect
1 : 1	unison	repose
2 : 1	octave	clarity
3 : 2	fifth	firmness
4 : 3	fourth	balance
5 : 4	major third	sweetness
6 : 5	minor third	melancholy

He concludes that the poet who senses these proportions intuitively is the true musician of language.

Chapter 6 — Psychology of Temporal Perception

Here Motamed returns to human cognition.

Why does the ear perceive harmony in time?

Because, he argues, consciousness itself is rhythmic; perception depends on expectation and resolution.

A sequence of durations arouses the same neurological pleasure as consonance in pitch.

Citing Bergson and Helmholtz, he describes how the mind transforms temporal intervals into emotional values: rapid alternations create joy or agitation; slow, balanced waves create calm or reverence.

Thus quantitative harmony is not an abstraction but a psychophysical law.

He draws a parallel to architecture: columns and inter-columns, masses and voids.

In verse as in building, beauty arises from measured balance of presence and absence—of sound and silence.

Chapter 7 — Toward a Universal Metric

Motamed ends by proposing a universal theory of metrics transcending linguistic boundaries.

Every human language, he maintains, is a mode of vibration within time.

If we measure these vibrations precisely, the apparent chaos of prosody resolves into order.

The same ratios that govern sound also govern speech, gesture, and even thought.

> “There is,” he writes, “a rhythm that binds the pulse of the poet to that of the universe.

The diatemporal metric is but its transcription in the language of reason.”

He envisions a future in which poets and linguists collaborate with mathematicians and musicians to create a new science of verbal harmony, bridging East and West, tradition and modernity.

The Persian and French systems, far from opposed, become complementary: one preserves the precision of time, the other the fluidity of accent.

Their union, he concludes, would restore poetry to its rightful throne among the sciences of form.

Epilogue

Motamed closes his monumental essay with a modest note:

> “If this study can help a single poet to hear more clearly, or a single scholar to see the logic behind beauty, then its purpose is fulfilled.

For the ear, like the heart, learns by rhythm; and rhythm is the mathematics of the soul.”

(End of Book II — Applications, Examples, and Concluding Essays.)